NsWizard
User Guide

www.promax.it

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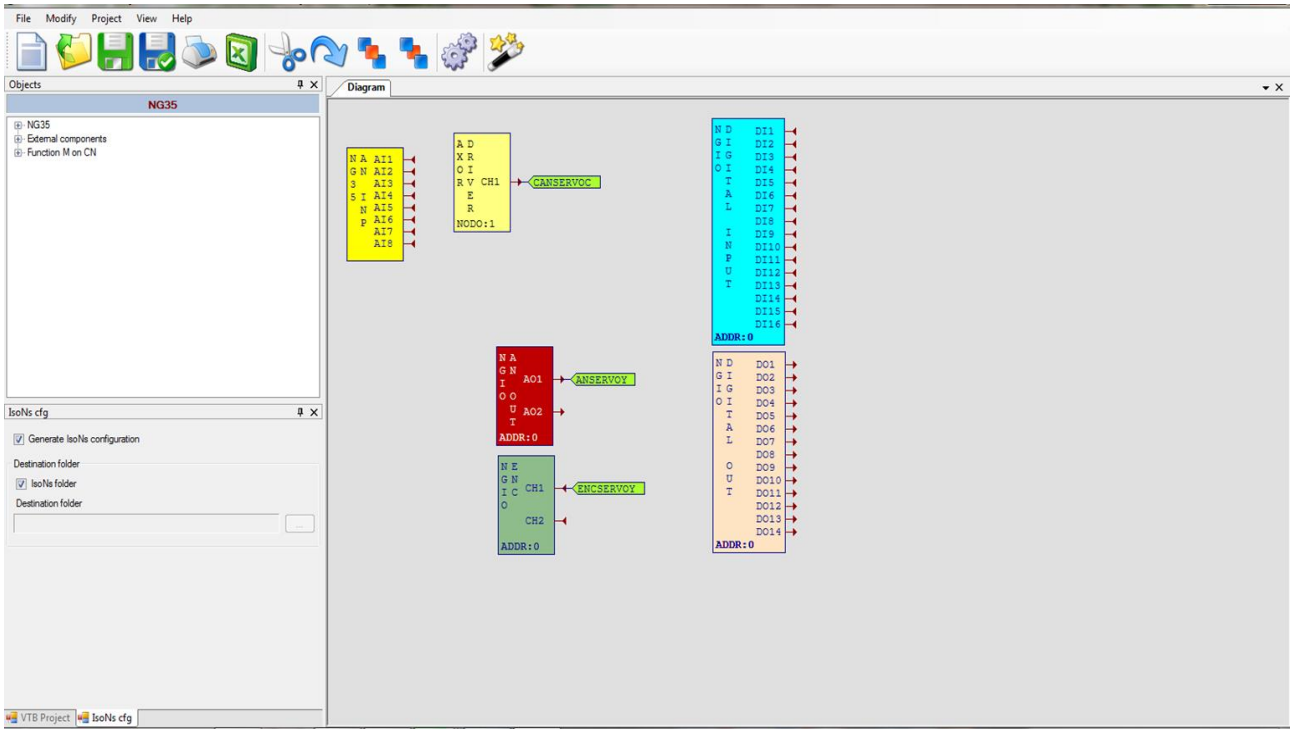
1 PREFACE

This document introduce to use by nsWizard Application.
NsWizard is a Promax product used with IsoNs and VTB application.
NsWizard simplifies the IsoNs Applications

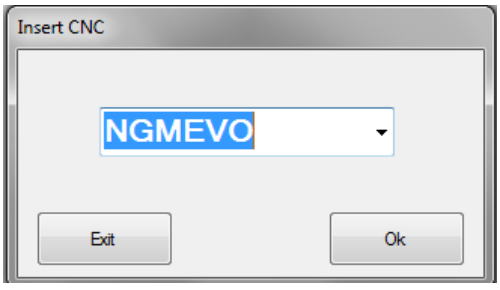
2 General



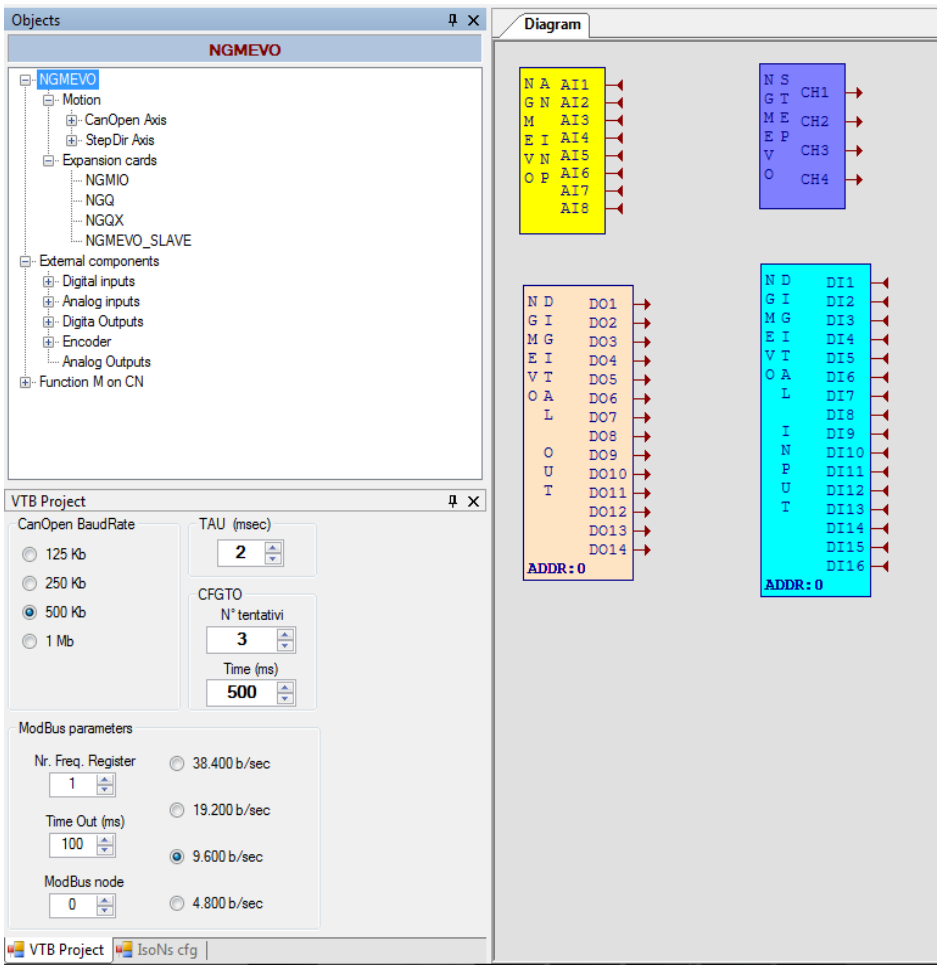
3 Make New Project

For make a new project. Use a button “New Project or:
File → New

Following must be select the CNC type

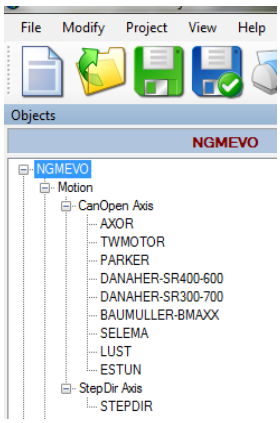


Select a desired CNC and press button OK.
Automatically are insert all CNC standard resources



3.1 Added a Motion Obiect

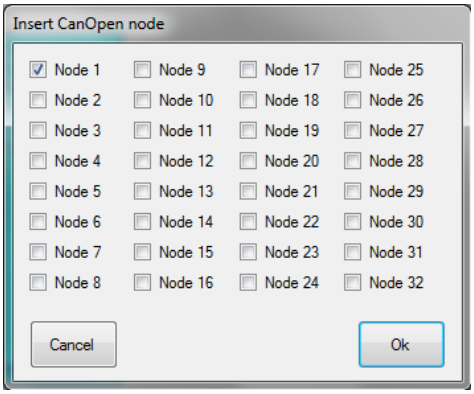
The types of motion management, depend by CNC selected
Select the motion type from tree view table.



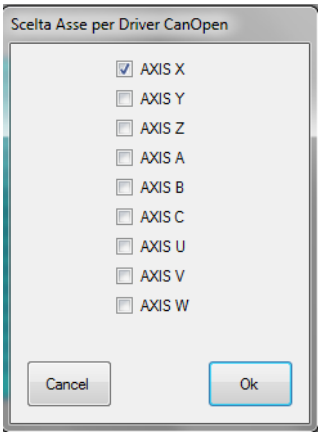
If the component desired is not in library, contact promax:
info@promax.it
You can combiine more motion types, ex: CanOpen,Step/dir etc

3.1.1 Added CanOpen Motion

When the motion CanOpen is added, first, must be insert the node number. The node number, must be equal to number selected in the driver used

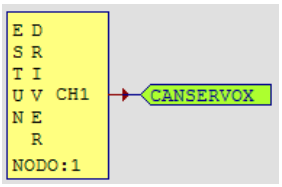


NsWizard do not allows to select two same node numbers



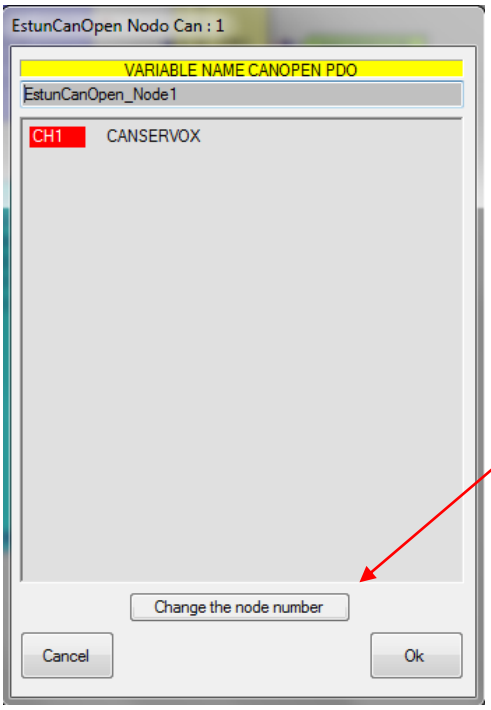
When the node number is select, the next step, is insert the Axis name.
This name is the same used in the GCODE programs

When the above steps is completed, in the project, is inserted the CanOpen object
The object is displayed in the form, and can be deleted or modified



3.1.2 CanOpen Parameters

The CanOpen parameters, can be modified after the object is inserted.
Select the object, with mouse, right click button



Parameters:

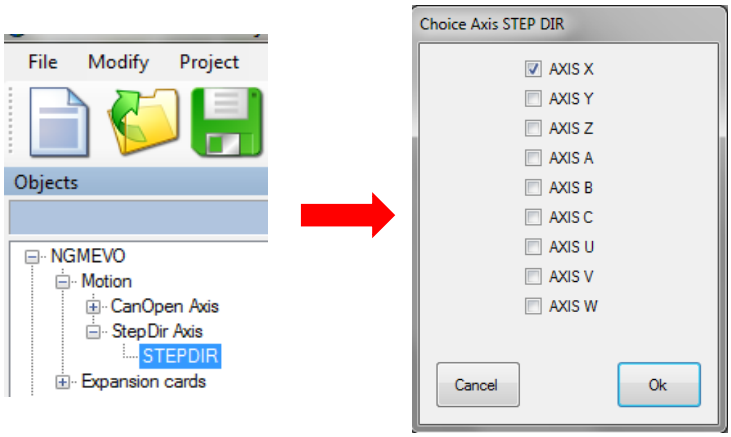
PDO Variable name
You can insert the name PDO, used in the application VTB for a interpolated value.
Is not necessary change the PDO name

Node Number
You can change the node number
Click on button

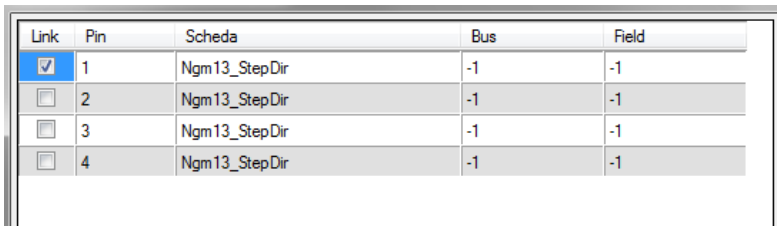
Click on button

3.1.3 Added Pulse/Dir Motion

This motion type, is used only if the CNC support the axes STEP/DIR

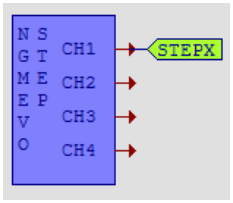


Insert the Axis name.
This name is the same used in the GCODE programs



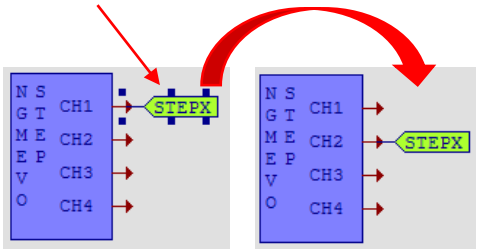
Link	Pin	Scheda	Bus	Field
☑	1	Ngm13_StepDir	-1	-1
☐	2	Ngm13_StepDir	-1	-1
☐	3	Ngm13_StepDir	-1	-1
☐	4	Ngm13_StepDir	-1	-1

Insert the STEP/DIR channel where is connect the motion



This motion tipology has not properties.
Is possible change only the channel STEP/DIR
Select the **STEP** field with left button mouse, and drag and drop in the new channel

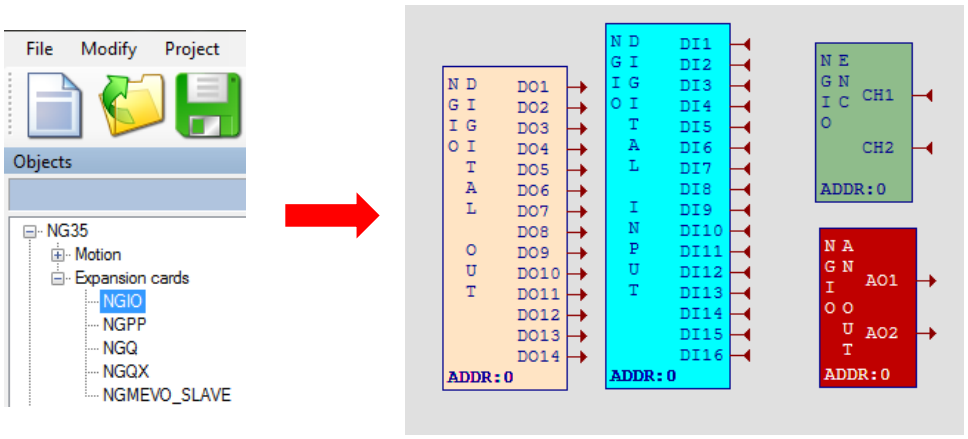
Left Button Mouse Click



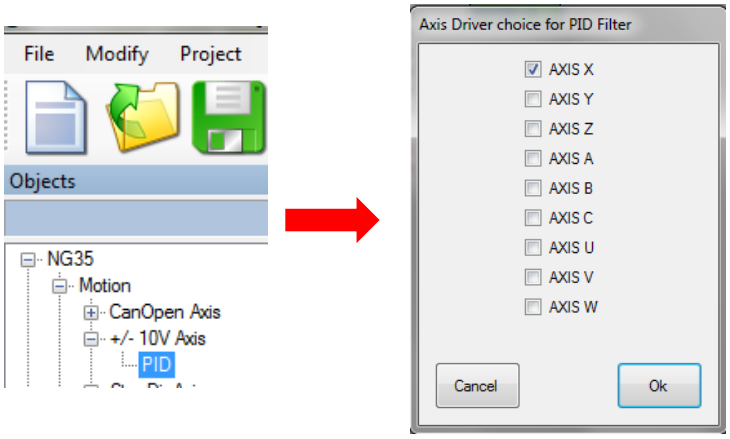
For drag the **FIELD**, press and do not release left button mouse, until it is on the new channel

3.1.4 Added PID +/-10V Motion

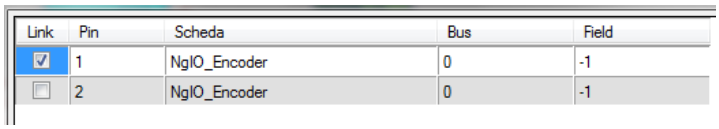
For insert this motion type, the CNC must have, the encoder channel and analog +/- 10 Volt outputs (ex: NGIO for NG35)



First insert a expansion board ex: NGIO (2 encoder inputs, 2 analog outputs +/-10V)

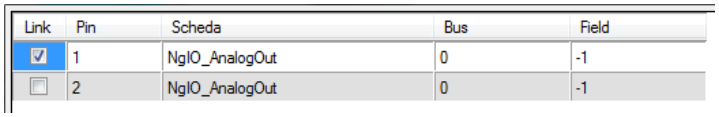


Select PID type, and axis name to used.



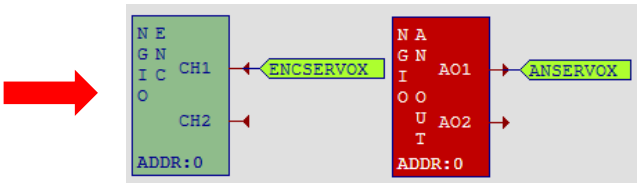
Link	Pin	Scheda	Bus	Field
☑	1	NgIO_Encoder	0	-1
☐	2	NgIO_Encoder	0	-1

Select the encoder channel and analog output



Link	Pin	Scheda	Bus	Field
☑	1	NgIO_AnalogOut	0	-1
☐	2	NgIO_AnalogOut	0	-1

The axis is automatically added

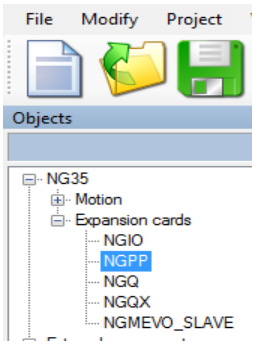


Also this motion type, has not property.
Is possible change the channel, in the same mode to STEP/DIR

3.2 Added Expansions Board

Is possible added the expansion boards in two tipology:

1. On local bus
2. On CanOpen field bus



Select a expansion board.
Automatically all hardware resources are added at the project.
The expansion boards on local bus, are automatically enumerate.
For the expansion boards on field bus, is requested the node number

3.3 Added the external components

On the Inputs and outputs, is possible inserting the external components:
Buttons, Touch probe, Homing switch, Limits switch, Override potentiometer, Manual jog etc.

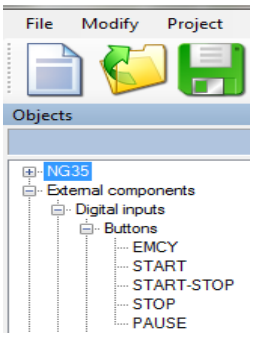
3.4 Digital Inputs Class

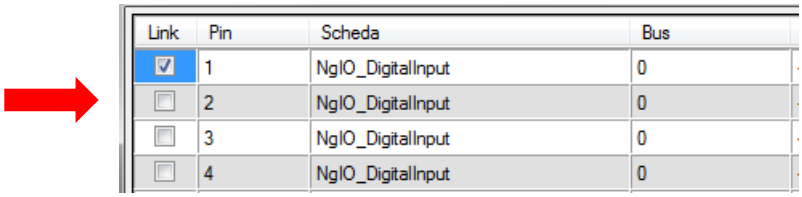
This class contains all digital inputs management by CNC.
All digital inputs have only one property:
N.O. (contact normally open)
N.C. (contact normally close)

3.4.1 Buttons

Contains all buttons type which can be connect on the CNC

Select the components and insert it in the digital inputs on the CNC



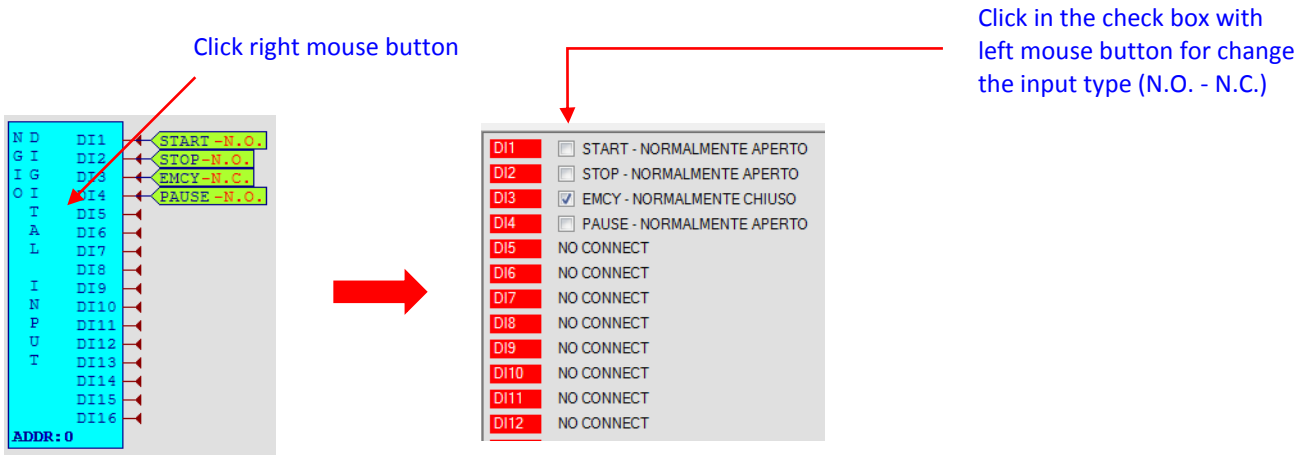


Link	Pin	Scheda	Bus
☑	1	NgIO_DigitalInput	0
☐	2	NgIO_DigitalInput	0
☐	3	NgIO_DigitalInput	0
☐	4	NgIO_DigitalInput	0

Buttons available:

EMCY → Emergency button
START → External START button
START-STOP → START/STOP Button
If CNC in **STOP**, is required a **START**
If CNC in **START** is required a **STOP**
STOP → STOP button
PAUSE → PAUSE button

When the button is inserted, is possible change the property:
N.O. (contact normally open)
N.C. (contact normally close)
By Drag and Drop is possible move the button, in a digital input free
For change the property see following step:


Click right mouse button
Click in the check box with left mouse button for change the input type (N.O. - N.C.)
DI1 START -N.O.
DI2 STOP -N.O.
DI3 EMCY -N.C.
DI4 PAUSE -N.O.
ADDR: 0
DI1 START - NORMALMENTE APERTO
DI2 STOP - NORMALMENTE APERTO
DI3 EMCY - NORMALMENTE CHIUSO
DI4 PAUSE - NORMALMENTE APERTO
DI5 NO CONNECT
DI6 NO CONNECT
DI7 NO CONNECT
DI8 NO CONNECT
DI9 NO CONNECT
DI10 NO CONNECT
DI11 NO CONNECT
DI12 NO CONNECT

3.4.2 Touch Probe Input

Probe input used during **G102** Gcode function

Probe:

ACQ → Probe input used during **G102** Gcode function

3.4.3 Homing Inputs

Switch for homing inputs

Homing:

HomeX → Input Homing Axis X
HomeY → Input Homing Axis Y
HomeZ → Input Homing Axis Z
HomeA → Input Homing Axis A
HomeB → Input Homing Axis B
HomeC → Input Homing Axis C
HomeU → Input Homing Axis U
HomeV → Input Homing Axis V
HomeW → Input Homing Axis W

3.4.4 Limits Switch

Switch for Axes limits

Switch:

FCM_X → Negative Limit Switch Axis X
FCM_Y → Negative Limit Switch Axis Y
FCM_Z → Negative Limit Switch Axis Z
FCM_A → Negative Limit Switch Axis A
FCM_B → Negative Limit Switch Axis B
FCM_C → Negative Limit Switch Axis C
FCM_U → Negative Limit Switch Axis U
FCM_V → Negative Limit Switch Axis V
FCM_W → Negative Limit Switch Axis W

FCP_X → Positive Limit Switch Axis X
FCP_Y → Positive Limit Switch Axis Y
FCP_Z → Positive Limit Switch Axis Z
FCP_A → Positive Limit Switch Axis A
FCP_B → Positive Limit Switch Axis B
FCP_C → Positive Limit Switch Axis C
FCP_U → Positive Limit Switch Axis U
FCP_V → Positive Limit Switch Axis V
FCP_W → Positive Limit Switch Axis W

3.4.5 Single JOG Axis

Manual JOG for single Axis.

JOG:

JOGP_X	→ Positive JOG Axis X	***JOGM_X***	→ Negative JOG Axis X
JOGP_Y	→ Positive JOG Axis Y	***JOGM_Y***	→ Negative JOG Axis Y
JOGP_Z	→ Positive JOG Axis Z	***JOGM_Z***	→ Negative JOG Axis Z
JOGP_A	→ Positive JOG Axis A	***JOGM_A***	→ Negative JOG Axis A
JOGP_B	→ Positive JOG Axis B	***JOGM_B***	→ Negative JOG Axis B
JOGP_C	→ Positive JOG Axis C	***JOGM_C***	→ Negative JOG Axis C
JOGP_U	→ Positive JOG Axis U	***JOGM_U***	→ Negative JOG Axis U
JOGP_V	→ Positive JOG Axis V	***JOGM_V***	→ Negative JOG Axis V
JOGP_W	→ Positive JOG Axis W	***JOGM_W***	→ Negative JOG Axis W

3.4.6 Selector JOG Axes

Jog Axes by selector . Only one axis at a time can be selected

JOG:

JOGP	→ Positive JOG Axis selected
JOGM	→ Negative JOG Axis selected
SELX	→ Digital Input Select Axis X
SELY	→ Digital Input Select Axis Y
SELZ	→ Digital Input Select Axis Z
SELA	→ Digital Input Select Axis A
SELB	→ Digital Input Select Axis B
SELC	→ Digital Input Select Axis C
SELU	→ Digital Input Select Axis U
SELV	→ Digital Input Select Axis V
SELW	→ Digital Input Select Axis W

3.5 Analog Inputs Class

This class contains all analog inputs available

3.5.1 Feed Control

A questa classe di componenti esterni, fanno parte gli ingressi analogici per il controllo della FEED Assi (es potenziometro di overide).

Analog:

OW%	→ FEED Override potentiometer

3.6 Digital Output Class

This class contains all digital outputs on CNC
You can changed only one property:
N.O. (contact normally open)
N.C. (contact normally close)
About the properties management see chapr. ***3.4***

3.6.1 Signals

This class contains all CNC signals

Signals:

ALARM	→ Active when the CNC is on Alarm
CNREADY	→ Active when the CNC is ready to work (when the VTB application is started)
CNSTOP	→ Active when the CNC is in STOP
CNRUN	→ Active when the CNC is in RUN (Gcode executing)
CNSTOPRUN	→ Active when the CNC is in RUN, Deactive when the CNC is in STOP
CNPAUSE	→ Active when the CNC is in PAUSE

3.7 Encoder Class

This class contains the electronic handweel. This have not some property

3.7.1 HandWeel

Handweel for manual JOG Axes
The axis movmented by HandWell, is the Axis Selected for JOG

HandWell:

VOL_AXIS	→ Object to insert in the free encoder channel.

3.8 Class M Functions on CNC

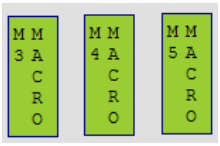
A questa classe sono associate tutte le funzioni M gestite dal CNC. Tipo M3 , M4 ecc.

3.8.1 M3 - M4 -M5

Spindle management:

M3 → Start Spindle CW
M4 → Start Spindle CCW
M5 → Stop Spindle

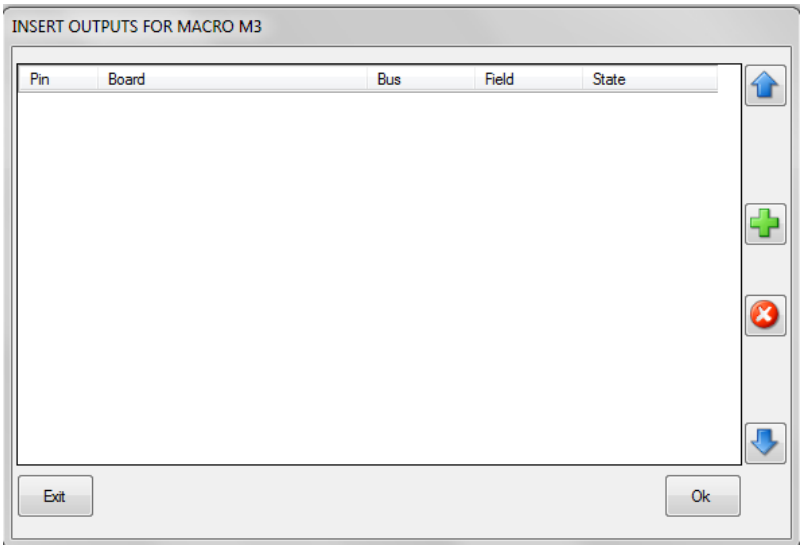
Is inserted, a **"M3-M4-M5 MACRO".** It must be configured for a correct Spindle Management



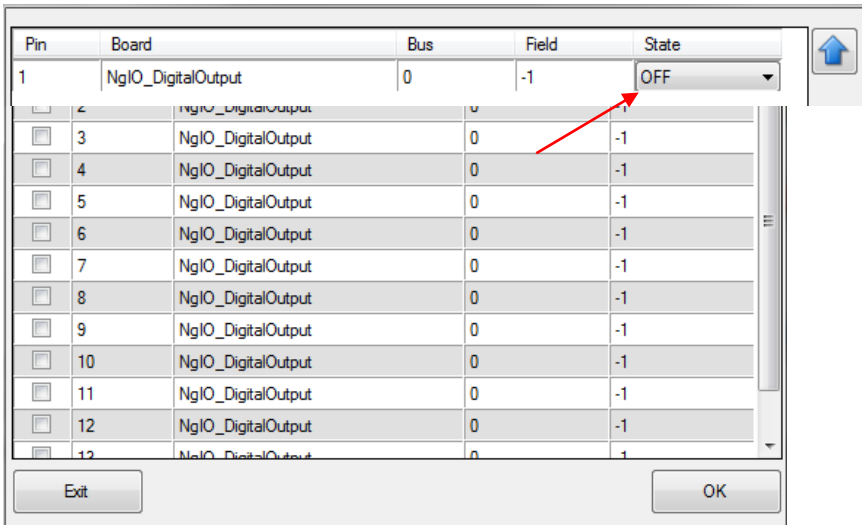
3.8.2 M3-M4-M5 Configure by NsWizard

NsWizard can configure the M3,M4,M5 functions. If the NsWizard configuration is not sufficient, you can configure the M function by VTB Application.

Select the function by right mouse button
Following this window is displayed:



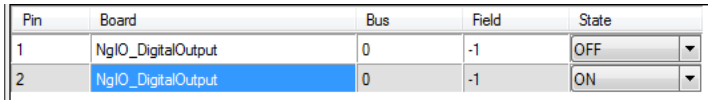
Click on the button **"Insert New Output"** and choose the digital output (one or more) to activated/deactivated when the M function is called:



Select teh output state **OFF** or **ON**

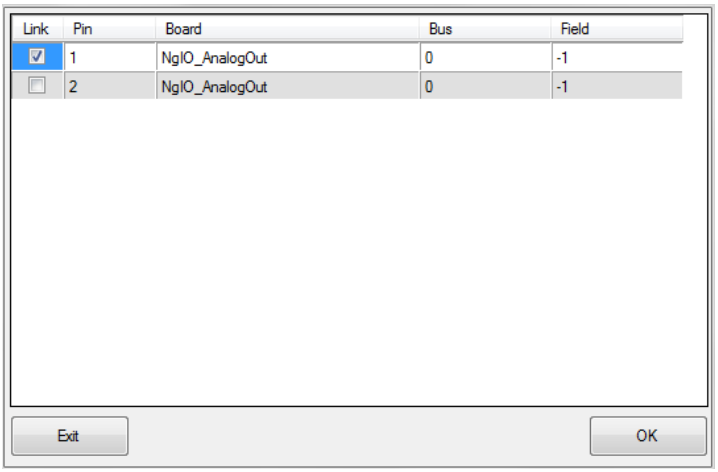
Use these buttons, for move Up or move Down the activated/deactivated outputs sequence

Use this button for delete select digital output in the M function



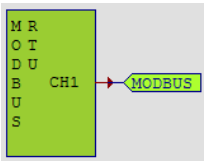
3.8.3 SPEED10V Spindle 0-10V speed

This component, allow to set the **Spindle** Speed by 0-10 V analog output
The Spindle Speed is set by **S Gcode** function. For adapting the Speed, you must set the **MAX_SPEED_SPINDLE** IsoNs parameter. It indicate the **Rpm** at 10 Volt analog output. (see Chapr 4 **"Configuring Base Parameters"**)
This component must be inserted in analog output (you must insert the boards: NGIO, NGQx etc.)



3.8.4 MODBUS Spindle Speed

This component, allow to set the Spindle Speed by **Modbus RTU** protocol



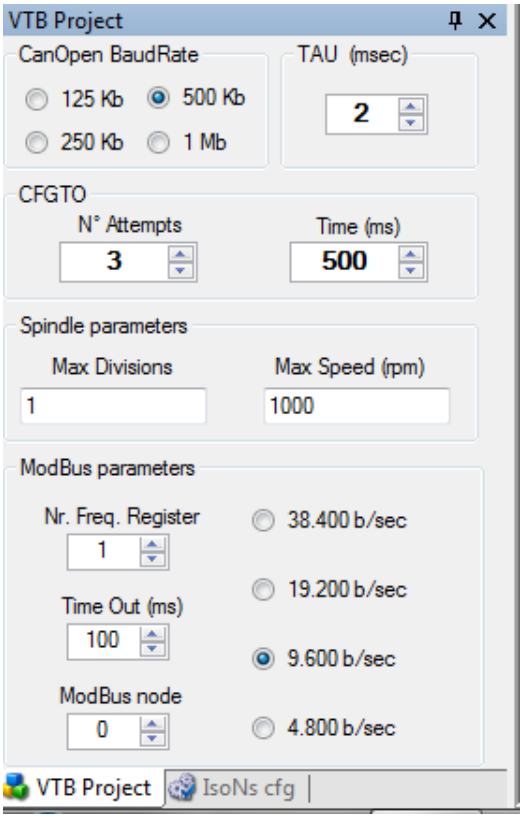
For Modbus register configuration, see the Chapr. 4 **"Configuring Base Parameters"**
The ModBus serial data output, is ever refered to **SER2** on CNC (it can be configured RS232 or RS485)

4 Configuring Base Parameters

This configuration allow to set the IsoNS and VTB parameters

4.1 VTB Parameters

The VTB Parameters, defined an important application functions, you must set it with attention



CanOpen baud rate

Set the CanOpen Baud Rate only if present.

TAU (msec)

System Sample CNC (see following reference values)
From **1** to **5** Msec for application with Axes Canopen or +/- 10V.
2 Msec can control up to 8 Axes
For PULSE/DIR Axes from 2 to 5 Msec
Check by VTB Debug Application, the Task Plc Load.
It should not be over the 80%

CFGTO

START UP parameters for CanOpen components in the line
Is prefered not change

N. Attempts
Number of Attempts for connection to Slave Node.
After these Attempts, if the node not respond, the error:
"Node not found" is called

Time (Ms)
Time in millisecond between an attempt and another

Modbus Parameters

Parameters for Spindle in MODBUS

Nr. Freq. Register
Number of register for Frequency Set

Time Out (ms)
ModBus Time Out

ModBus node
Node modbus Spindle

Baud rate
Select Baud Rate

Spinlde Parameters

Max Divisions
Indicate the number of division for Speed setting
If **SPED10V** insert **2048** for a 10V value (normally not change)
If the Spinlde is **ModBus,** the value is the frequency in Hertz for a setting the Rpm Max
See the **Max Speed Spindle (rpm)** parameter

Max Speed (rpm)
Indicate the Spindle RPM max refered top 10V analog output (SPED10V) or rpm max refered at Hertz value

Ex: Analog Spinlde at 18000 rpm (uses SPED10V)

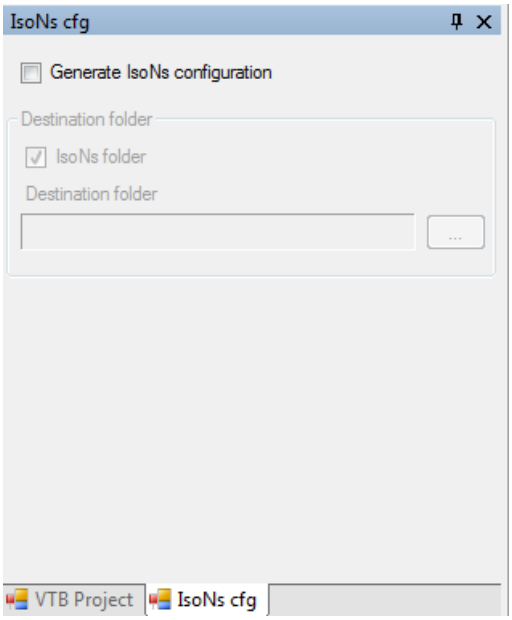
Max Divisions → 2048
Max Speed (Rpm) → 18000

Ex: Modbus Spinlde at 18000 rpm at 50Hz (uses MODBUS)

Max Divisions → 50 (or 500 you must see the inverter parameters)
Max Speed (Rpm) → 18000

4.2 IsoNs Parameters

There are not particulars parameters to set in IsoNs, NsWizard can generate automatically the file **"IsoNs.cfg"**



Generate IsoNs configuration
Check for generate **IsoNs.cfg**

IsoNs folder
If enabled the above parameter, and enabled this parameter, the IsoNs.cfg file, is generate in the IsoNs folder (if it is installed)
WARNING
The actual file IsoNs.cfg, will lost

Destination folder
If not enabled the parameter ***"IsoNs Folder"***, you can choose the folder where will saved the new file Isons.cfg

5 Load Project

Allow to load a project previously saved in hard disk
File → Open

6 Save project

Save the actual project
File → Save

7 Save As

Save the actual project with name
File → Save As

8 Print

Print the connections list
File → Print

9 Export

Export the connections list in the CSV file
File → Export

10 Cut

Delete the selected obkect

Modify → Cut

11 Undo

Cancel the last modify

Modify → Undo

12 Move Up - Down

Move the selected object Up or Down on the drawing

Modify → Move Up

Modify → Move Down

13 Defining Gantry Axes

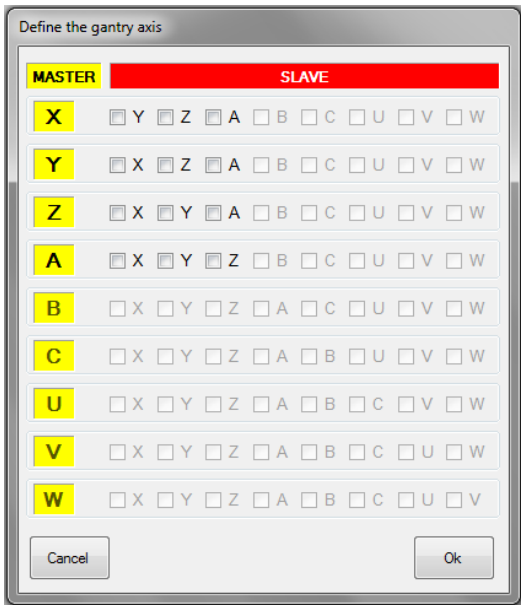
Defines the gantry Axes in the project

The Gantry axis, pratically, is a copy of other axis (the same movement)

Project → Axes Gantry

Select the Gantry Axes

Ex: **X (master)** Gantry with **A (slave)**


Define the gantry axis
MASTER
SLAVE
X Y Z A B C U V W
Y X Z A B C U V W
Z X Y A B C U V W
A X Y Z B C U V W
B X Y Z A C U V W
C X Y Z A B U V W
U X Y Z A B C V W
V X Y Z A B C U W
W X Y Z A B C U V
Cancel
Ok

The other combinations with X and A axes, are automatically exluded

14 Compile Project

Compiles the actual project and generates the VTB Project.

If the actual project, has not been saved, the new saving is proposal.

The VTB project, will have the same name of the NsWizard Project, but with extension **".pxp"**

Open the **.Pxp** project with VTB , compile it and upload on the CNC

Project → Compile

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